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FACSIMILE TRANSMITTAL FORM	Application Number	10/689172
	Filing Date	October 20, 2003
	First Named Inventor	Lunsford, Duane A.
	Art Unit	1771
	Examiner Name	Daniel R. Zirker
Fax: 571-273-8300	Attorney Docket Number	58683US003
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Date: May 8, 2006	Attorney for Applicant: Thomas M. Spielbauer	

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32692

Customer Number

Patent
Case No.: 58683US003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: LUNSFORD, DUANE A.
Application No.: 10/689172 Group Art Unit: 1771
Filed: October 20, 2003 Examiner: Daniel R. Zirker
Title: ADHESIVE ARTICLES INCLUDING NANOPARTICLE PRIMER AND
METHODS FOR PREPARING SAME

BRIEF ON APPEAL

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5-8-06
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Jenny Thompson
Signed by: Jenny Thompson

Dear Sir:

This is an appeal from the Office Action mailed on October 28, 2005, in light of the Advisory Action mailed January 6, 2006, finally rejecting claims 1-11 and 29-37.

A Notice of Appeal in this application was mailed on February 28, 2006, and was received in the USPTO on March 6, 2006.

The fee required under 37 CFR § 41.20(b)(2) for filing an appeal brief should be charged to Deposit Account No. 13-3723.

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REAL PARTY IN INTEREST

The real party in interest is 3M Company of St. Paul, Minnesota and its affiliate 3M Innovative Properties Company of St. Paul, Minnesota.

RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interferences.

STATUS OF CLAIMS

Claims 1-11 and 29-37 are pending.

Claims 12-28, and 38 were cancelled.

Claims 1-11 and 29-37 stand rejected and are the claims on appeal.

STATUS OF AMENDMENTS

Applicants filed an after final response under 37 C.F.R. § 1.116 mailed December 20, 2006, which included a request to cancel claim 38. According to the Advisory Action mailed January 6, 2006, the request to cancel claim 38 was entered. No other after-final amendments were made.

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SUMMARY OF CLAIMED SUBJECT MATTER

Generally, an adhesive article comprises a substrate having an adhesive applied to at least a portion of at least one surface of the substrate. Examples of such adhesive articles include single-coated and double-coated adhesive tapes, including foam tapes. There are numerous methods for treating substrate surfaces to improve the adhesion of adhesives thereto, such as chemical etching, electron-beam irradiation, corona treatment, plasma etching, coextrusion of adhesion promoting layers, and coating substrates with adhesion promoting primer coatings, some of which may be subsequently crosslinked. The desired result of these adhesion-promoting methods is to make the substrate more receptive to adhesives and to promote strong interfacial bonds between the substrate and the adhesive. There is a continuing need to identify improved materials and methods for increasing the adhesion between substrates and adhesives. (See page 1, lines 14 – page 2, line 7.)

The claims of the present application concern adhesive articles and methods of bonding an adhesive layer to a substrate that include a primer that consists essentially of nanoparticles. Referring to FIG. 1, exemplary adhesive article 10 comprises substrate 14 having first surface 24, and adhesive layer 12 having first surface 22. First surface 22 of adhesive layer 12 is bonded to first surface 24 of substrate 14 such that primer 16 is interposed between adhesive layer 12 and substrate 14. (See page 3, lines 8-11.)

Exemplary substrates include polymeric films and foams, as described at, e.g., page 3, line 27 – page 8, line 9. Exemplary adhesives are described at, e.g., page 8, line 10 – page 11, line 19, and include, e.g., pressure-sensitive and non-pressure sensitive adhesives, acrylate and methacrylate polymers and copolymers, and silicone pressure sensitive adhesives. The adhesive layer comprises no more than 3% by weight acrylic acid repeat units. (See, e.g., page 11, lines 8-10, and independent claims 1 and 29.)

The primer consists essentially of nanoparticles, wherein the term “consists essentially of” has been expressly defined to mean “free of an effective amount of a component that reacts with the adhesive or the substrate (i.e., ambifunctional silane), and /or any polymeric binders that act to increase the adhesion of the adhesive to the substrate.” (See page 11, lines 20-23.)

Exemplary nanoparticles are described at, e.g., page 11, line 24 – page 14, line 11.

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GROUND OF REJECTION TO BE REVIEWED ON APPEAL

- I. Claims 1-11 and 29-37 stand rejected under 35 U.S.C. § 103(a) as purportedly being unpatentable over Lange et al. (US 4,816,333).
- II. Claims 6 and 32 stand rejected under 35 U.S.C. § 103(a) as purportedly being unpatentable over Lange et al., in view of Melancon et al. (US 2003/0152768 A1).

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ARGUMENT**I. Claims 1-11 and 29-37 stand rejected under 35 U.S.C. § 103(a) as purportedly being unpatentable over Lange et al. (US 4,816,333).**

“The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art.” (In re Dow Chemical Co., 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988) (internal citations omitted).) “A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field.” (In re Kotzab, 217 F.3d 1365, 1369, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000).) “That the inventors were ultimately successful is irrelevant to whether one of ordinary skill in the art, at the time the invention was made, would have reasonably expected success. [A] finding to the contrary represents impermissible use of hindsight-using the inventors' success as evidence that the success would have been expected.” (Life Technologies, Inc. v. Clontech Laboratories, Inc., 224 F.3d 1320, 1326, 56 USPQ2d 1186, 1191 (Fed. Cir. 2000) (internal citations omitted).)

The test for obviousness requires evaluation of “the references as a whole so that their teachings are applied in the context of their significance to a technician at the time....” (See, e.g., Interconnect Planning Corp. v. Feil, 744 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985).) “When prior art contains apparently conflicting references, the Board must weigh each reference for its power to suggest solutions to an artisan of ordinary skill.” (In re Young, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991).)

A. *At best, Lange et al. might pique a scientist's curiosity to investigate further, but the disclosure of Lange et al. does not contain a sufficient teaching that the claimed result would be achieved.*

According to the Examiner, “Lange et al. at col. 4, lines 5-9, clearly teach that the reference primer is clearly suitable ‘as a primer for adhering adhesives to substrates’, with no restrictions whatsoever on the type of adhesive used.” (See Office Action mailed October 28, 2005; ¶ 3.) Applicants respectfully traverse and submit that the cited passage from Lange et al. must be considered in its context. When determining what Lange et al. suggest, one of ordinary

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skill in the art would at least consider the entire passage, i.e., "The excellent adhesion of the coating to the substrate and the adhesive of the test tape also demonstrates the utility of the coating as a primer for adhering adhesives to substrates, such as polymeric substrates, e.g., polyester films." (Lange et al., col. 4, lines 5-9 (emphasis added).)

Furthermore, one of ordinary skill in the art would realize, as the Examiner has acknowledged, that Lange et al. fail to describe any adhesive other than the specific adhesive of the test tape used. (See Office Action mailed May 25, 2005; ¶ 12.) Applicants note that, in contrast to the adhesives of the present invention, the adhesive of Lange et al. contains greater than 3% by weight acrylic acid. (See Decl. of Robert G. Murray, filed August 18, 2005, and re-presented in the Evidence Appendix.)

While one of ordinary skill in the art might infer that Lange et al.'s statement was broad enough to encompass adhesives other than the specific "adhesive of the test tape," Applicants respectfully submit that one of ordinary skill in the art, reading Lange et al. in its entirety, would also recognize that such a sweeping interpretation is supported solely by a result achieved with a single adhesive tape applied to a single substrate. Thus, any broad interpretation of this phrase in Lange et al. would be qualified by this knowledge.

Applicants respectfully submit that these factors would detract from Lange et al.'s power to suggest solutions to an artisan of ordinary skill. Thus, at best, Lange et al. might pique a scientist's curiosity to investigate further, but the disclosure of Lange et al. does not contain a sufficient teaching that the claimed result would be achieved. Such an "obvious to try" situation must not be equated with obviousness under 35 U.S.C. § 103(a). (See, e.g., Gillette Co. v. S.C. Johnson & Son, Inc., 919 F.2d 720, 725, 16 USPQ2d 1923, 1928 (Fed. Cir. 1990).)

B. EP '756 clearly and unambiguously steers one of ordinary skill in the art to the use of primers containing nanoparticles modified by ambifunctional silanes, rather than primers consisting essentially of nanoparticles.

In the Advisory Action mailed January 6, 2006, the Examiner noted that Applicants had overcome the 35 USC 103 rejections which partially rely on EP 0 372 756 (EP '756). Although Applicants acknowledge with appreciation the Examiner's position regarding EP '756; Applicants submit that EP '756 remains highly relevant as it clearly and unambiguously teaches away from the present invention. A reference such as EP '756 teaches away when a person of ordinary skill in the art, upon reading the reference, would be "led in a direction divergent from

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the path that was taken by the applicant.” (*In re Haruna*, 249 F.3d 1327, 1335, 58 U.S.P.Q.2d 1517, 1552 (Fed. Cir. 2001) (quoting *Tec Air, Inc. v. Desno Mfg. Mich. Inc.*, 192 F.3d 1353, 1360, 52 USPQ2d 1294, 1298 (Fed. Cir. 1999).) Therefore, although the Examiner has rejected claims 1-11 and 29-37 as being unpatentable over Lange et al. individually, the limited persuasive power of Lange et al. must be weighed against that of EP ‘756, as their disclosures are in conflict.

EP ‘756 describes a primer layer for pressure-sensitive and cold-seal adhesives. The primer comprises a continuous gelled or hydrolyzed network of inorganic particles. (See page 2, lines 40-44.) EP ‘756 repeatedly and explicitly states that the gelled network of nanoparticles must contain ambifunctional silane. (See, e.g., page 2, lines 40-44 (“The network contains a specified amount of a particular ambifunctional silane”) and lines 50-51 (“The primer layer comprises a continuous network of inorganic particles ... containing an ambifunctional silane”; page 3, lines 22-23 (“The network must contain specified ambifunctional silane”) and lines 49-50 (“A specified adhesion promoting effective amount of an ambifunctional silane must be present in or on the gelled network”); and page 5, lines 23-26 (“The ambifunctional silane is present as from 0.1% to 20% by weight of the solids content of the gelled particulate layer”).)

Thus, EP ‘756 expressly distinguishes the nanoparticles of its primer from the nanoparticles of Lange et al. in that the nanoparticles of EP ‘756 must contain ambifunctional silane. Furthermore, EP ‘756 describes the role of the ambifunctional silane as providing multiple reactive species such that one reactive species can react with the nanoparticle and the other reactive species can react with one of the layers in contact with the primer. (See page 5, lines 23-33.) Such nanoparticles are expressly excluded from Applicants’ definition of a primer that “consists essentially of nanoparticles.” (See, e.g., Specification page 11, lines 20-23.)

Applicants respectfully submit that, in contrast to the limited persuasive power of a broad interpretation of Lange et al.’s assertion, which is based on a single adhesive tape, the persuasive power of EP ‘756 is enhanced by experimental results “show[ing] that Sol-gel/corona constitutes a functional primer for adhesives over a range of film substrate types and adhesive types” (page 8, lines 31-32). (See also, EP ‘756 at Examples 1-4.)

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C. The Examiner has failed to establish the requisite reasonable expectation of success, and for at least this reason, the rejection should be reversed.

In summary, even in a rejection based solely on Lange et al., the Patent Office must consider the teachings of both Lange et al. and EP '756. The persuasive power of these conflicting references must be assessed, without the benefit of hindsight or Applicants' disclosure. Ultimately, although absolute predictability is not required, a reasonable expectation of success is necessary to show obviousness. (See, e.g., Gillette Co. v. S.C. Johnson & Son, Inc., 919 F.2d 720, 724, 16 USPQ2d 1923, 1928 (Fed. Cir. 1990) (citing In re Farrell, 853 F.2d 894, 903-04, 7 USPQ2d, 1673, 1681 (Fed. Cir. 1988).)

Applicants respectfully submit that no such reasonable expectation has been established. Upon weighing each of the conflicting references for its power to suggest solutions to an artisan of ordinary skill, it is clear that the broad interpretation given to the statement of Lange et al. might, at best, pique a scientist's curiosity to investigate further, but the disclosure of Lange et al. does not contain a sufficient teaching that the claimed result would be achieved. In contrast, the disclosure of EP '756 clearly and unambiguously steers one of ordinary skill in the art to the use of primers containing nanoparticles modified by ambifunctional silanes, rather than primers consisting essentially of nanoparticles. That is, EP '756 would lead one of ordinary skill in a direction divergent from the path that was taken by the applicant.

For at least these reasons, the rejection of claims 1-11 and 29-37 under 35 USC § 103(a) as purportedly being unpatentable over Lange et al. (US Patent No. 4,816,333) is unwarranted, and Applicants respectfully request that this rejection be reversed.

II. Claims 6 and 32 stand rejected under 35 U.S.C. § 103(a) as purportedly being unpatentable over Lange et al., in view of Melancon et al. (US 2003/0152768 A1).

Melancon et al. appears to be cited solely for its description of silicon polyurea based adhesives with reference to pending claims 6 and 32. (See Office Action mailed May 25, 2005; ¶ 12.) Applicants respectfully submit that the Examiner has failed to show how Melancon et al. overcome the deficiencies of Lange et al. as discussed above. For at least these reasons, the rejection of claims 6 and 32 under 35 USC § 103(a) as purportedly being unpatentable over Lange et al. (US 4,816,333) in view of Melancon et al. (US 2003/0152768) is unwarranted and Applicants respectfully request that this rejection be reversed.

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CONCLUSION

For the foregoing reasons, appellants respectfully submit that the Examiner has erred in rejecting this application. Please reverse the Examiner on all counts.

Respectfully submitted,

May 8, 2006
Date

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Office of Intellectual Property Counsel
3M Innovative Properties Company
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CLAIMS APPENDIX

1. (Previously Presented) An adhesive article comprising:
 - (a) a first substrate comprising a first major surface;
 - (b) a first adhesive layer, wherein the first adhesive layer comprises no more than 3% by weight acrylic acid repeat units; and
 - (c) a first primer layer interposed between at least a portion of the first major surface of the substrate and at least a portion of the first adhesive layer, wherein the first primer consists essentially of nanoparticles.
2. (Original) The adhesive article of claim 1, wherein the first substrate is untreated.
3. (Original) The adhesive article of claim 1, wherein the first substrate comprises a polymeric film.
4. (Original) The adhesive article of claim 1, wherein the first substrate comprises a foam.
5. (Previously Presented) The adhesive article of claim 4, wherein the foam comprises a polymer selected from the group consisting of acrylic, polyethylene, ethylene vinyl acetate, and combinations thereof.
6. (Previously Presented) The adhesive article of claim 1, wherein the first adhesive layer comprises at least one of silicone polyurea and acrylate.
7. (Original) The adhesive article of claim 1, wherein the nanoparticles have a maximum cross-sectional dimension of no more than 20 nanometers.
8. (Previously Presented) The adhesive article of claim 1, wherein the nanoparticles are selected from the group consisting of silica, ceria, iron oxide, and combinations thereof.

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9. (Original) The adhesive article of claim 1, wherein the nanoparticles are surface modified.
10. (Previously Presented) The adhesive article of claim 1, further comprising a second primer layer interposed between at least a portion of the second major surface of the first substrate and at least a portion of a second adhesive layer.
11. (Previously Presented) The adhesive article of claim 1, further comprising a second primer layer interposed between at least a portion of a first major surface of a second substrate and at least a portion of the first adhesive layer.

Claims 12-28 (Cancelled)

29. (Previously Presented) A method of bonding an adhesive layer to a substrate comprising:
- (a) interposing a primer consisting essentially of nanoparticles between a first major surface of the substrate and a first major surface of the adhesive layer, wherein the adhesive layer comprises no more than 3% by weight acrylic acid repeat units;
 - (b) adhering at least a portion of the first major surface of the substrate to the primer;
- and
- (c) adhering at least a portion of the first major surface of the adhesive layer to the primer.
30. (Original) The method of claim 29, wherein the substrate is a polymeric film.
31. (Previously Presented) The method of claim 30, wherein the substrate comprises a polymer selected from the group consisting of polyolefins, polyesters, polyimides, polystyrenes, acrylics, polyacrylates, polymethacrylates, polymethylmethacrylates, polyurethanes, urethane acrylate polymers, epoxy acrylate polymers, polyacetals, polycarbonate, polysulfone, cellulose acetate butyrate, polyvinyl chloride, and combinations thereof.

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32. (Previously Presented) The method of claim 29, wherein the adhesive comprises at least one of silicone polyurea and acrylate.
33. (Original) The method of claim 29, wherein the nanoparticles have a maximum cross-sectional dimension of no more than 20 nanometers.
34. (Previously Presented) The method of claim 29, wherein the nanoparticles are selected from the group consisting of silica, ceria, iron oxide and combinations thereof.
35. (Original) The method of claim 29, wherein the nanoparticles are surface modified.
36. (Original) The method of claim 29, wherein (b) comprises providing a primer solution comprising the nanoparticles and applying the primer solution to at least a portion of the first major surface of the substrate; and (c) comprises contacting at least a portion of the primed portion of the first major surface of the substrate with at least a portion of the first major surface of the adhesive layer.
37. (Previously Presented) The method of claim 29, wherein (c) comprises providing a primer solution comprising the nanoparticles and applying the primer solution to at least a portion of the first major surface of the adhesive layer; and (b) comprises contacting at least a portion of the primed portion of the first major surface of the adhesive layer with at least a portion of the first major surface of the substrate.
38. (Cancelled)

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EVIDENCE APPENDIX

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Customer Number

Patent

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: LUNSFORD, DUANE A.

Application No.: 10/689172

Group Art Unit: 1771

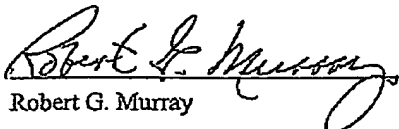
Filed: October 20, 2003

Examiner: Daniel R. Zirker

Title: ADHESIVE ARTICLES INCLUDING NANOPARTICLE PRIMER AND
METHODS FOR PREPARING SAMEDECLARATION UNDER 37 C.F.R. § 1.132

I, Robert G. Murray, declare:

1. I have been an employee of 3M Company since September 29, 1969.
2. I had product control responsibility for 3M's Scotch Brand Magic transparent tape from about 1979 to 1983.
3. I have continued to work on processes associated with the manufacture of the 3M's Scotch Brand Magic transparent tape adhesive from 1983 to the present.
4. From at least 1969 until the present, the adhesive used with 3M's Scotch Brand Magic transparent tape contained greater than 3% by weight acrylic acid.
5. The undersigned declares further that all statements made herein of his own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements and the like are punishable by a fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful, false statements may jeopardize the validity of the application or any patent issuing thereon.


Robert G. Murray8.17.2005
Date